09/851,387

Docket No.: 205002US2

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RE: Inventor: Mitsuhiro NADA
Patent No.: 6,854,881 B2
Issued: February 15, 2005
Group Art Unit: 2859
Examiner: VERBITSKY, G
For: METHOD OF ESTIMATING TEMPERATURE AND DEVICE FOR THE EFFECTING SAME

SIR:

Attached hereto for filing are the following papers:

REQUEST FOR CERTIFICATE OF CORRECTION
CERTIFICATE OF CORRECTION FORM PTO 1050

Our check in the amount of $0.00 is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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DOCKET NO.: 205002US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Mitsuhiro NADA

PATENT NO.: 6,854,881 B2 GROUP: 2859

ISSUED: February 15, 2005 EXAMINER: VERBITSKY, G

FOR: METHOD OF ESTIMATING TEMPERATURE AND DEVICE FOR THE EFFECTING SAME

REQUEST FOR CERTIFICATE OF CORRECTION

DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
ALEXANDRIA, VA 22313-1450

SIR:

The following is a request for a certificate of correction in Serial Number 09/851,387, now Patent Number 6,854,881.

In accordance with the provisions of Rule 322 of the Rules of Practice, which implement 35 USC 254, the Patent Office is respectfully requested to issue a certificate of correction in the above-identified patent.

In light of the fact that the errors were the fault of the Patent Office, no fees are required. The requested corrections are listed on FORM P.T.O. 1050.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,854,881 B2

DATED: February 15, 2005

INVENTOR(S): Mitsuhiro NADA

It is certified that an error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the title page, Item (57) under the ABSTRACT portion, the number of Claims is incorrect. Item (57) under the ABSTRACT portion, 8 Claims should read:

-- (57) 14 Claims --

Column 18, line 58, delete ";" and insert --:--.

Column 19, line 4, delete "1" and insert --2--;
line 4, delete "second" and insert --first--;

line 5, delete "power semiconductor element " and insert --stator iron core of an electric motor--;

line 6, delete "first" and insert --second--;
lines 6-7, delete "coolant for cooling the power semiconductor element," and insert --stator coil of the electric motor, and--;

lines 8-11, delete "wherein the step (c) includes a process of measuring the temperature of the power semiconductor element with a temperature sensor installed on the power semiconductor element, and";

lines 13-15, delete "of the coolant from the temperature change of the power semiconductor element in a state where the power semiconductor element is not energized" and insert --increment quantity ΔT in accordance with a specific value substantially indicating the amount of energization of the electric motor from the relation between the predetermined temperature increment quantity ΔT and the specific value substantially indicating the amount of energization of the electric motor--; and

lines 16-41, delete the entire contents of Claim 5 in Column 19 and insert – 5. A method according to claim 4, wherein the step (c) includes a process of determining the temperature of the stator iron core on the basis of the temperature of a coolant for cooling the stator of the electric motor and the specific value substantially indicating the amount of energization of the electric motor--.

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Column 20, lines 1-5 , delete the entire contents of the remaining portion of Claim 5;

lines 6-17, delete the entire contents of Claim 6 and insert --6. A method according to claim 1, wherein the second object is a stator iron core of an electric motor,

wherein the first object is a coolant for cooling the stator of the electric motor, and

wherein the step (d) includes a process of determining the temperature of the stator iron core on the basis of the coolant temperature and a specific value substantially indicating the amount of energization of the electric motor.--;

lines 18-40, delete the entire contents of Claims 7 and 8 and insert --7. A method according to claim 1, wherein the second object is a power semiconductor element,

wherein the first object is a coolant for cooling the power semiconductor element,

wherein the step (c) includes a process of measuring the temperature of the power semiconductor element with a temperature sensor installed on the power semiconductor element, and

wherein the step (d) includes a process of determining the temperature of the coolant from the temperature change of the power semiconductor element in a state where the power semiconductor element is not energized.

8. A temperature estimation device for estimating a temperature of one of the first and second objects from the temperature of the other object, and for detecting an abnormality, comprising:

a temperature measuring portion for measuring the temperature of one of the first and second objects by a temperature detector; and

an estimation portion for estimating the temperature of the other of the first and second objects using a first method in which the temperature of the other of the first and second objects is estimated on the basis of the temperature measured by the temperature determination portion and a specific value substantially indicating the amount of energization of the second object, for estimating the temperature of the other of the first and second objects using a second method which is different from said first method, and for detecting an abnormality of at least one of the detector, a system for the first object and a system for the second object based on the temperature estimated by the first method and the temperature estimated by the second method,

wherein the second object is an energizable object that generates heat upon an energization thereof, wherein said second object exhibits a temperature change in response to heat which is more rapid than a temperature change of the first object in response to heat, and wherein said second object is positioned in the vicinity of the first object for exchanging heat therebetween such that said second object assumes a temperature approximately equal to that of the first object in the absence of heat generation therein.

9. A device according to claim 8, wherein, when the temperature of the first object is assumed as T1, the temperature of the second object as T2, and a temperature increment quantity of the second object that is related to the specific value substantially indicating the amount of the energization as ΔT, a relation between the temperature increment quantity ΔT and the specific value substantially indicating the amount of the energization is preliminarily set, and the estimation by the estimation portion is executed according to the following equation: $T2 = T1+\Delta T$.

10. A device according to claim 9, wherein the second object is a power semiconductor,

wherein the first object is a coolant for cooling the power semiconductor element, and wherein the estimation portion determines the temperature increment quantity ΔT in accordance with a specific value that substantially indicates the amount of energizaiton of the power semiconductor element from the relation between the predetermined temperature increment quantity ΔT and the specific value substantially indicating the amount of energization of the semiconductor element.

11. A device according to claim 9, wherein the first object is a stator iron core of an electric motor,

wherein the second object is a stator coil of the electric motor, and

wherein the estimation portion determines the temperature increment quantity ΔT in accordance with a specific value substantially indicating the amount of energization of the electric motor from the relation between the predetermined temperature increment quantity ΔT and the specific value substantially indicating the amount of energization of the electric motor.

12. A device according to claim 11, wherein the temperature determination portion determines the temperature of the stator iron core on the basis of the temperature of a coolant for cooling the stator of the electric motor and the specific value substantially indicating the amount of energization of the electric motor.

13. A device according to claim 8, wherein the second object is a stator iron core of an electric motor,

wherein the first object is a coolant for cooling the stator of the electric motor, and

wherein the estimation portion determines the temperature of the stator iron core on the basis of the coolant temperature and a specific value substantially indicating the amount of energization of the electric motor.

14. A device according to claim 8, wherein the second object is a power semiconductor element,

wherein the first object is a coolant for cooling the power semiconductor element,

wherein the temperature determination portion measures the temperature of the power semiconductor element with a temperature sensor installed on the power semiconductor element, and

wherein the estimation portion determines the temperature of the coolant from the temperature change of the power semiconductor element in a state where the power semiconductor element is not energized.--.

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Patent No. 6,854,881 B2

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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,854,881 B2

DATED: February 15, 2005

INVENTOR(S): Mitsuhiro NADA

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wherein the step (d) includes a process of determining the temperature of the coolant from the temperature change of the power semiconductor element in a state where the power semiconductor element is not energized.

8. A temperature estimation device for estimating a temperature of one of the first and second objects from the temperature of the other object, and for detecting an abnormality, comprising:

a temperature measuring portion for measuring the temperature of one of the first and second objects by a temperature detector; and

an estimation portion for estimating the temperature of the other of the first and second objects using a first method in which the temperature of the other of the first and second objects is estimated on the basis of the temperature measured by the temperature determination portion and a specific value substantially indicating the amount of energization of the second object, for estimating the temperature of the other of the first and second objects using a second method which is different from said first method, and for detecting an abnormality of at least one of the detector, a system for the first object and a system for the second object based on the temperature estimated by the first method and the temperature estimated by the second method,

wherein the second object is an energizable object that generates heat upon an energization thereof, wherein said second object exhibits a temperature change in response to heat which is more rapid than a temperature change of the first object in response to heat, and wherein said second object is positioned in the vicinity of the first object for exchanging heat therebetween such that said second object assumes a temperature approximately equal to that of the first object in the absence of heat generation therein.

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